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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/578,421

05/05/2006

Ki Ju Kang

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EXAMINER

KENNY, DANIEL J

ART UNIT

PAPER NUMBER

3633

MAIL DATE

DELIVERY MODE

08/31/2010

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/578,421	<b>Applicant(s)</b> KANG ET AL.	
	<b>Examiner</b> DANIEL KENNY	<b>Art Unit</b> 3633	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 14 June 2010.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-5, 7-13, 15 and 16 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-5, 7-13, 15, and 16 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |   |   |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                    | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)         | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____   | 6) <input type="checkbox"/> Other: _____                          |

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 1 and 9 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The claim recites that “each of the six wires having a compound curve between each of the intersections of the first to the sixth wires, the compound curve comprising a first curve in one direction and a second curve in an opposite direction and that alternates relative to the first curve at the intersection”. The written specification and drawings do not disclose that the wires are alternating compound curved between intersection points. Cited Fig. 7 alone, considering the fact that there it is inherent difficulty to interpret specific individual wire structure from a graphic 3-dimensional representation of a unit of a matrix of bent wires, is not sufficient support, as the wires could for example have a more complex repeating 3-dimensional structure (like a twisted wire) rather a simpler two dimension alternating, repeated, planar configuration.

Art Unit: 3633

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 1 and 9 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The claim recites that “each of the six wires having a compound curve between each of the intersections of the first to the sixth wires, the compound curve comprising a first curve in one direction and a second curve in an opposite direction and that alternates relative to the first curve at the intersection”. The claim recites that the compound curve comprises a first curve in one direction and a second curve in an opposite direction “and that alternates” relative to the first curve at the intersection. As the compound curve is essentially defined as the curve between the intersections, it is confusing as to which portion of the compound curve alternates?

***Claim Rejections - 35 USC § 103***

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

**Claims 1-6, 8, and 16 - are rejected under 35 U.S.C. 103(a) as being unpatentable over Snelson (6,739,937) in view of Barlow (4,271,628).**

Snelson discloses a structure (Fig. 4 below) comprising:

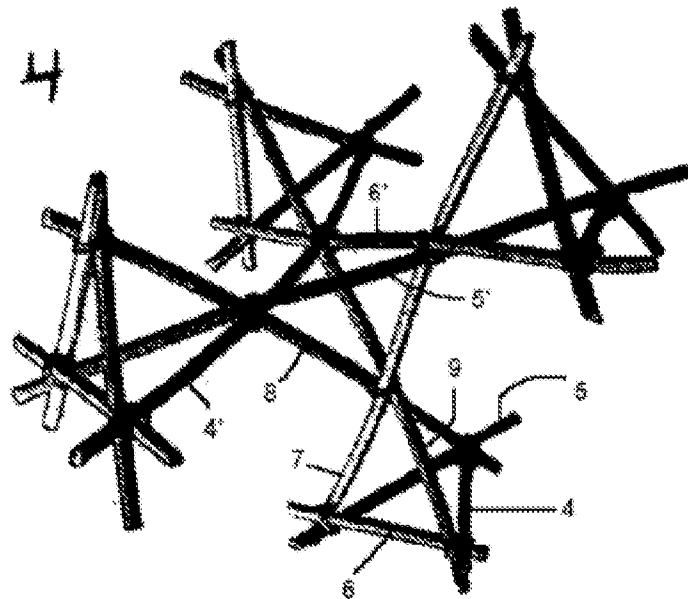
*Claim 1* - a) a first tetrahedron member formed of a first to sixth wires, the first tetrahedron member being constructed in such a manner that the first wire (4), the

Art Unit: 3633

second wire (5), and the third wire (6) are intercrossed in a plane to form a triangle, the fourth wire (7) is intercrossed with the intersection point of the second wire and the third wire, the fifth wire (8) is intercrossed with the intersection point of the first wire and the second wire, and the sixth wire is intercrossed with the intersection point of the third wire and the first wire, the fourth wire, the fifth wire, and the sixth wire (9) being intercrossed with one another at a single reference intersection point; and

b) a second tetrahedron member contacted with the first tetrahedron member at the reference intersection point and having a similar shape to the first tetrahedron member, the second tetrahedron member being constructed in such a manner that the fourth wire, the fifth wire, and the sixth wire pass the reference intersection point and extend further, each of a group of wires (4', 5', 6') is intercrossed with two wires selected from the extended fourth, fifth and sixth wires, the group of wires being in parallel with the first wire, the second wire, and the third wire respectively; and

and the unit cell is repeated in a three-dimensional pattern, thereby forming a wire (or rod)-woven truss-type structure.



Annotated Fig. 4 (6,739,937)

Barlow discloses that it is old in the art to form regular tetrahedron structures (Fig. 20), wherein the forming elements are intercrossed with each other at 60 degrees or 120 degrees, and the unit cell is repeated in a three-dimensional pattern, thereby forming a truss-type structure.

It would have been obvious to one of ordinary skill in the art at the time the present invention was made to include the regular tetrahedron structures taught by Barlow to form “complex geometrical structures” (col. 1, line 26), which helps achieve the Snelson goal of forming “more challenging” three dimensional space frame objects.

Finally, the Snelson rod-woven structure does not expressly disclose that the wires are alternating compound curved between intersection points. However, since the structure of Snelson in view of Barlow (a rod-woven structure unit cell repeated in a

Art Unit: 3633

three-dimensional pattern, thereby forming a truss-type structure) is identical to the woven structure claimed, Snelson in view of Barlow would have the same structure.

Claim 2 - Among the six groups of orientational wires, three groups of orientational wires forming a vertex of the first or second regular tetrahedron member are intercrossed clockwise or counterclockwise when seen from the front of the vertex.

Claims 3 and 4 – The Barlow first and second regular tetrahedron members have a similarity ratio of 1:1. (Fig. 6)

Claim 5 – The wires are any one selected from the group consisting of metal, ceramics, synthetic resin, and fiber-reinforced synthetic resin.

Claim 6 - The intersection point of the wires is bonded by any one selected from the group consisting of a liquid- or spray-form adhesive, brazing, soldering, and welding.

Claims 8 and 16 – The claims are rejected, as they depend from rejected claim 1.

**Claim 7- is rejected under 35 U.S.C. 103(a) as being unpatentable over Snelson in view of Barlow and in further view of Constantinesco (2,677,955).**

Constantinesco discloses that it is old in the art to manufacture a reinforced composite material manufactured by filling with a resin, the empty space of a three-

Art Unit: 3633

dimensional wire cellular light structure. It would have been obvious to one of ordinary skill in the art at the time the present invention was made to manufacture a reinforced composite material manufactured by filling with a resin, the empty space of a three-dimensional wire cellular light structure as taught by Constantinesco using the claim 1 three-dimensional wire-woven cellular light structure of Snelson to have “a final product that, after setting and hardening, is a new material with an increased resistance to compression” (col. 3, line 20), such a permanent final product being “for display” (col. 1, line 63).

**Claim 9-15 – are rejected under 35 U.S.C. 103(a) as being unpatentable over Snelson in view of Barlow and in further view of Constantinesco.**

Claim 9-15 are an obvious method of using the device(s) of the above claims.

### ***Response to Arguments***

Applicant's arguments have been fully considered but they are not persuasive.

Applicant argues that “the unit cells are repeated to form a three dimensional truss-type structure that does not require bonding to stabilize the structure. Applicants submit that the cited references fail to disclose or otherwise suggest this feature.”, In response to applicant's argument that the references fail to show no bonding required, it is noted that the features upon which applicant relies are not recited in the rejected claims. Although the claims are interpreted in light of the specification, limitations from



Art Unit: 3633

the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

Regarding Applicant's argument that the cited references do not disclose that the lengths of the sides of the unit cell in the cellular structure of the presently claimed invention are of equal lengths, the lengths of the sides of the unit cell in the cellular structure of the woven structure of Snell modified by Barlow are of equal lengths, as the Barlow discloses equal length unit cell side lengths. In addition, in Kagome it is taught that a regular geometric form, with similar length wire segments between joints, is stronger as compared to a light structure having non-regular geometric cells.

Finally, in response to Applicant argument that "the cited references only appear to depict wires that are mostly straight", Snalson discloses that the wires are formed with a zig-zag, bent or twisted configuration" (para. 35).

### ***Conclusion***

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the

Art Unit: 3633

shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to DANIEL KENNY whose telephone number is (571)272-9951. The examiner can normally be reached on Mon-Fri. 8:00-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Brian Glessner can be reached on (571) 272-6754. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/D. K./  
Examiner, Art Unit 3633

/Jeanette E Chapman/  
Primary Examiner, Art Unit 3633